REPORT AND RECOMMENDATIONS
TO THE PRESIDENT ON
RADIO PLANS FOR
INDIANA UNIVERSITY

SUBMITTED 6 DECEMBER, 1944

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The material and recommendations submitted in this report are the result of several conferences with representatives of various administrative divisions of the University, and the result of securing the most up-to-date information available for the planning of a station. It is the opinion of all to whom it was submitted for criticism that this report is sufficiently complete to present a well-balanced picture of our immediate needs and it is intended to replace all previous reports on radio planning.

It represents what the University needs to do competent and thorough work in broadcasting and in training students for radio. It is based on the experiences of radio stations in educational institutions throughout the country, and the requests herein are much more modest than the grants for the same purpose at the University of Oklahoma ($300,000.00), the University of Michigan ($175,000.00), the University of Illinois ($100,000.00) for expansion of present ($40,000) staff and equipment ($60,000), and others. However we believe that with the equipment, personnel, and budget here outlined, provided that we have adequate technical assistance in our choice of materials, to eliminate possible waste and insure careful planning, we can operate a station and offer a thorough student training program.

Part I

LICENSE APPLICATION STATUS

Quoting first from a letter of November 15, 1944, from Mr. T. J. Slowie, Secretary of the Federal Communications Commission:

"Subsequent to the time that you filed your application, the Commission adopted new application forms for this service. It is requested therefore that new forms be completed and filed as an amendment to your application. It will be considered by the Commission as superseding the data now on file with the present application. The Commission desires, however, to retain in its files the forms which you previously submitted. Several copies of the new application form (Number 340) are enclosed together with several press releases which may be of interest.

"In the event that you desire to make changes in specified equipment or in other portions of the application, this may be done at any time prior to action on the application by filing an amendment properly subscribed and sworn to, and with the same number of copies as the original application. In the event such changes are desired after action is taken on an application it is necessary to file an application for modification of construction permit."

Inasmuch as the FCC merely files, but does not examine or study incomplete applications, it is necessary that we proceed at once to complete our application, so that we may have this period of planning for handling possible changes that the FCC may suggest or order. This information, not now in our application, we are now supplying as quickly as it can be secured. All of it cannot be secured or provided without the services and advice of a qualified, licensed engineer, experienced in FM construction, and operation, and also experienced in preparing the engineering aspects of FCC applications. Regarding the services of such

an engineer we are making a specific recommendation later in this report.

Samples of the type of material, some of which were not called for on the old application form, but which we must supply to the FCC in order to get our application before them for study, suggestions and approval follow:

1. Estimated cost of operations [21(a)]
2. Attach maps or diagrams showing extent of the school system or systems to be served. [21(d)]
3. Minimum number of hours of daily operation. [22(d)]
4. Describe transmitting apparatus proposed [24, two pages of specifications to complete blanks.]
5. Diagrams of all circuits. [25]
6. Make, type, tested accuracy of transmitter equipment [26(a,b,c)]
7. Same for modulation equipment [27]
8. Same for antenna system [28(a through i)] including:
   Dimensions (b), height above ground level (c), above sea-level (d), description of building on which tower is to be mounted (e), type, efficiency etc. of transmission line (h), photographs of proposed location of antenna site, including adjacent buildings and surrounding terrain in at least 8 directions from site (i).
9. Estimated initial costs of equipment (list) and installation.
10. Population in $\frac{1}{2}$ - mile and 3 - mile radius of transmitter [30(b)].
11. Number of <u>known</u> commercial or government <u>receiving</u> station antenna systems in 3 - mile radius [30(c)].
12. Name, location (on map) of all airports within 10 miles of proposed site [30(d)].
13. Name and distance to center of established AIRWAYS within 10 miles.
14. Topographic map, 15 mile radius. (Not available. We are having photostats of all available maps made -- but a good engineer will

have to chart the rest of this region since the Indiana Survey is not complete for this area) [31(a)]

15. Diagram of surrounding area -- showing business, manufacturing zones, etc, heights of buildings, air navigation markings on nearby (15 mile elevations. [31(b,1,2,3)]

16. If construction permit is granted, construction will be commenced within_____days, and the station ready for operation within_____ days thereafter.

Recommendation

The correct answer to many of these questions must be supplied by a consulting engineer in this field of radio. Therefore we recommend the employment of Mr. John Caraway, builder of FM station WMLL, Evansville-on-the-Air, and recently with the Harvard Radio Research Bureau, or someone else with comparable training and experience, to prepare all the technical data, not now available, which they request, and to check our application for submission to the FCC. Working closely with him, we believe satisfactory answers, maps, specifications and drawings can be drawn.

They can then be submitted to the FCC which will either approve it and hold it until we can get equipment (this can be specified as an amendment to our approved application) or return it to us for correction and further information.

As an example of charges for technical services, Mr. Caraway, mentioned above, if his services were obtained, would charge from $150 to $500 to complete and check our application, making necessary tests and maps. He is also available at $100 per month on a retainer basis. His charge for work on the ground is approximately $50.00 a day, plus expenses.

As can be seen from the nature of the questions, delay in answering them has not been a result of lack of interest or initiative. We must

have the technical services recommended if we are to prove to the FCC that we intend to build and operate such a station, and if we are to have them retain our application in their active files.

Part II

RECOMMENDED ORGANIZATION OF PROPOSED UNIVERSITY RADIO STATION AND TRAINING

Various courses in the field of Speech training serve as basic training for the fundamentals of Radio Broadcasting. Announcing, dramatic production, and other phases of microphone work demand oral skills most closely related to the study of diction, acting, and the oral reading of written material.

With the prospects of television sooner or later enlarging the radio field, the advantages of close cooperation with persons trained to give assistance in make-up, scene and stage design, and lighting work also become obvious.

For these reasons it is recommended that all phases of Radio work be administered and operated through a newly created School of Speech and Radio, consisting of the following:

1. Dramatics.
2. Radio Broadcasting.
3. Public Speaking and Discussion.
4. Voice: Phonetics, Diction and Corrective Speech.

Ultimate affiliation of this recommended School with the School of Music and the Department of Art into a School of Fine Arts is strongly urged.

Below is the suggested organization of the recommended radio station personnel and their duties. Attention is called to the fact that with this station personnel we shall be securing also the personnel necessary to teach the enlarged Radio curriculum. Each member of the station staff will also teach those radio courses for which he is trained and equipped.

In the following listing, the word "department" is to be understood as a department of the station, not as a University Department.

Because a radio station must have its own subdivisions, it is the general practice among educational as well as commercial broadcasters to retain this terminology for lack of a better word.

1. The Board of Trustees.
2. The President of the University.
3. The Director of Radio.
4. The Director of the Station.

The following departments of the station, and personnel:

A. Program Department (headed by Program Director.)

1. Program Director (this post would be filled for the first few, perhaps six months, until the station standards and policies are set up, by the Station Director, thus saving the salary of a Program Director until programs are too heavy for him, as Station Director, to handle.
2. Assistant Program Director (who will assist the Program Director and handle traffic and schedule clearance.)
3. Production Director and Chief Announcer (one man) with two half-time student announcers, regular employees of the station, which, for critical posts, must not be entrusted to volunteer personnel.
4. Continuity Director -- assisted by two half-time student writers.
5. Music Director.
6. News Editor.
7. Educational Director.
8. Music Librarian and File Clerk.

All members of the Program Department are responsible to the Program Director, and through him to the Station Director etc.

B. Engineering Department (Headed by Chief Engineer)

1. Chief Engineer, fully licensed -- responsible to Station Director.
2. Engineer (Full-time, licensed.)
3. Two half-time student engineers.

NOTE: By keeping the studios and transmitter in the same building, no more engineers should be necessary. Two must be on duty for all the time we are on the air (one in control room, one at transmitter panel) plus approximately 2 hours, (tests before opening each morning; reports after closing each evening) plus one for each remote broadcast for any special event being transmitted. By running direct lines to classrooms, a separate engineer for each regular classroom or out-of-studio broadcast can be avoided, and further salaries saved.

C. Secretaries: One for the Station Director, one for the Program Director, and one as receptionist and switchboard operator, in addition to personnel previously listed. The heavy volume of correspondence, typing and stenciling scripts, and keeping complete files of scripts, transcriptions, and legal files, together with the mailing of schedules, make at least the above secretarial assistance a necessity the first year.

Part III

JUSTIFICATION OF REQUEST FOR AN FM RATHER THAN AM STATION

An FM station will in no way obstruct or conflict with the installation in Bloomington of any commercial AM station. However, it should be pointed out that no frequencies are available for new AM stations except for daytime operation only. For adult education and in order to cover this area, now inadequately covered at night, it is imperative that we secure a station with night-time coverage, available now only with FM.

However, in making plans for our own station, we find that network authorities, the FCC, and most engineers, even those of RCA which at first vigorously opposed FM for various and obvious reasons not requiring enumeration here, are now predicting that FM will definitely supplant AM broadcasting in a few years. Predictions range from the replacement of all but a negligible number of AM stations by FM within 5 years, to more conservative estimates to the effect that there will merely be more FM than AM stations and listeners within 5 years.

Even persons with heavy investments in AM facilities are applying for FM stations. All the present Indianapolis station owners, plus several new broadcasters for example, have applied for FM stations in the Indianapolis area, for FM provides new frequencies, more desirable than those available on AM, which by its nature, limits the number of stations which may broadcast without interference. The four networks are organizing separate FM networks and planning a gradual complete change-over to FM. FM also is a step in the direction of television, since sound for television is best broadcast by FM, rather than AM. No television station in America to our knowledge, uses AM for sound transmission.

Having entered the radio field late, the radio stations in Indiana did not receive the more desirable frequency and power assignments.

There is only one clear channel in the state, and that, WOWO, has only 10 KW power. All Indianapolis stations are relatively weak, regional stations. All cities in America, comparable in size to Indianapolis, have at least one clear channel, 50 KW station, Indianapolis does not have. FM offers the state an opportunity to have facilities equal to those in other states, both commercially and educationally.

The following advantages of FM over AM as now or in the future available, cannot be denied:

1. Ninety percent Freedom from static.
2. Freedom from station interference.
3. Greater Freedom from fading.
4. More faithful transmission - the ability to transmit sounds and music not even remotely possible by AM, because of its limited band.
5. Greater economy due to the fact that FM eliminates the necessity for costly amplitude modulation tubes and power for their operation. AM is, as compared to FM, wasteful of electric power.

However, FM also has the following disadvantages:

1. The coverage radius is not as great, although more dependable for the region covered.
2. FM transmission, being so exact and faithful, suffers more from being sent over wires. Network FM and television operation will probably be mostly through the air, by relay broadcast, rather than along telephone lines, as for AM. However, developmental work is in progress on lines which may produce a type capable of handling FM and television with little loss of quality.
3. However, higher transmission fidelity, defects in equipment and performance will be more obvious in FM than in AM. Hence the need for better equipment and more exacting standards than for

AM broadcasting.

We all want for the University the best facilities we can get. We realize the seriousness and the wisdom of the choice of FM over AM. It is after securing all the information available that we believe, for its own facilities, the University should definitely apply only for an FM station.

Part IV

JUSTIFICATION OF REQUEST FOR 50 KW FM STATION INSTEAD OF 10 KW AS PREVIOUSLY SUGGESTED

1. At the time we sent in our original application, in Feb., 1944, the FCC had set aside certain channels for FM educational stations - but only for a power up to 1 KW, except that if this would mean inadequate coverage, such institutions might apply for 3, 5 or 10 KW power The 10 KW we applied for then was the maximum power for which we could apply with any hope of our license's being granted under the FCC rules as then set up.
2. As of October, 1944, the FCC has removed these limits on the power of proposed FM educational stations. Now, for the first time, we are permitted to apply for a 50 KW station, just as any commercial broadcaster may do.
3. In addition to changing their rule, the FCC in October, 1944, also established a precedent. They approved the University of Michigan's application, immediately amended from 10 to 50 KW, granting the first educational FM license of 50 KW.
4. It is the opinion of competent engineering authorities that we might reach Indianapolis and the largest population area of the state with a 10 KW station, but that this is doubtful. We therefore believe it our duty to the State and the University, in view of our disadvantageous geographical location, (as compared to mountain-top locations for example) to apply for the maximum in power (50 KW) and antenna height (according to a competent engineer) to get all the coverage good equipment and antenna location can give us.
5. 50 KW will also make us as powerful as any other station now planned in the state, and will make us a key station in the proposed Indiana educational network.

For the foregoing reasons we definitely recommend that the University apply for a 50 KW power FM station, and for an antenna which tests by a qualified engineer prove most effective for this area.

Part V

FACILITIES AND EQUIPMENT

Except to request the best 50 KW equipment possible, with a sufficiently high tower to enable us to send waves over all elevations in at least an adequate radius, we do not feel qualified to request specific facilities; for this we need technical advice in our planning.

It is, however, requested that a representative of Radio, a representative of the administration, and possibly an architect or coordinator of post-war building, visit the University of Iowa station, and perhaps one or more others, on order to ascertain what is a satisfactory studio and equipment arrangement and the amount of floor space needed for adequate facilities. Our only desire is to have adequate facilities for the accomplishment of first-class broadcasting work with a single building for both studios and transmitter. This arrangement would enable doubling up on the services of engineers and other members of the staff, and would eliminate the cost of separate buildings, power loss along expensive lines, and the maintenance costs of such facilities. Whether a new building should be used, or some existing building, such as the speech section of the Auditorium, should be determined on the basis of actual needs.

It should be pointed out, however, that if our station must wait for slow, post-war building for housing, Indiana University's new station will be starting at a great disadvantage - for Michigan, Iowa, Illinois and others already have adequate temporary quarters without waiting for new buildings, although new buildings will soon be built to house their new FM stations.

Part VI

ESTIMATED BUDGET

Because of the conflicting nature of figures from various sources, samples are here given, together with our estimates deduced therefrom. However, our own equipment estimates are based only on manufacturers' pre-war prices, since no post-war estimates are available, and, for personnel, on the actual operating budgets of successful AM stations now operating in the educational field.

For Initial Equipment and Installation, not including building, soundproofing, air-conditioning, lighting, plumbing, etc.

Quotations from	GE	USOE	FMBI	CBS	Inlanders Study(FM engineers)
1. 50 KW transmitter	$70,000	$70,000			
2. Monitoring Equipment	1,050				
3. Speech input Equipment	3,000				
4. Studio & Control Room Equipment	10,000	7,800			
5. Antenna, 8-Bay	13,000	10,000			
6. Installation Material and Labor for 1,3,4 above	10,000				
7. Supervision & Field Engineering	5,000				
8. Field Survey & Tests	4,000				
9. Miscellaneous (Recorders, Remote Equipment, Lines)	5,000				
10. Furniture & Office equipment (desks, files etc.)	4,000				
	$125,050	$130,000	$130,000	$180,000	$157,617

These figures are higher than earlier submitted for various reasons. 50 KW is approximately 50%-60% more expensive than 10 KW. Later and more exact transmitter prices recently received have been slightly higher, and

new, more efficient antenna systems are more expensive.

ANNUAL OPERATION ESTIMATES

CBS (network, therefore low)	FMBI	Inlanders Study
$37,000	$52,585 .	$54,833

Estimated Salaries (in addition to those now paid) for WIUB. These salary estimates are based on figures from stations in other educational institutions similar to Indiana University.

Administrative:

1. Radio Director (already in budget)
2. Station Director (present program director, now in budget)

Program Department:

3. Program Director (Station Director will serve in this post until station is well into operation)	$4,000
4. Assistant Program Director	3,200
5. Production Director & Chief Announcer	3,000
6. Continuity Director	2,800
7. Music Director	2,800
8. News Editor	2,800
9. Educational Director	2,800
10. Two half-time student announcers	1,200
11. Two half-time student continuity writers	1,200
12. Music Librarian and File Clerk	1,800

Engineering Department:

13. Chief Engineer	4,000
14. Licensed Engineer	3,000
15. Two student engineers	1,440

Secretarial:

16.	Secretary to station director	$1,500
17.	Secretary to program department	1,320
18.	Receptionist	1,320
	Estimated Total; first year, before deducting employees to be replaced.	$38,180

Important:

Musicians already provided in our budget would be retained. Already in our budget also are two technicians, one assistant, and a half-time secretary, for a total of $127.50 per month and $1,530 per year. Hence:

Total above	$38,180
Salary for present employees being displaced	1,530
Estimated Total additional salaries, first year.	$36,650

Estimated Total Costs for Indiana University Radio Station for first year of operation.

Equipment, furnishings, and installation	$125,050
Additional Salaries first year	36,650
Maintenance of plant, subscriptions to news & transcription services, Supplies, Printing, etc.	11,000
	$172,700

Provision must of course also be made for the replacement of worn-out parts, for salary increases, and for the enlargement of the staff as the station's operations develop. For example Wisconsin's School and College of the Air alone, a part of its Educational Department of the station, now has a staff of five which the state considers very worthwhile as a coordinator of state schools and education.

Scanned from the National Association of Educational Broadcasters Records
at the Wisconsin Historical Society as part of
"Unlocking the Airwaves: Revitalizing an Early Public and Educational Radio Collection."

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